DOCUMENT RESUME

ED 342 734 SP 033 592

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TITLE Activity in the Lifestyles of Adolescent Girls.
PUB DATE 88
NOTE 23p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; Cognitive Ability; Comparative Analysis; *Females; Foreign Countries; *Group Behavior; Health Promotion; High School Students; Life Style; Movement Education; *Physical Activity Level; Physical Health; *Predictor Variables; Secondary Education; Self Esteem
IDENTIFIERS Australia; Embedded Figures Test; Physical Estimation and Attraction Scales

ABSTRACT

This study was conducted to determine the significance of physical activity in the lifestyles of a selected group of female adolescents. Two groups of girls in their mid-teens, identified through a pilot study, were operationally defined as activity seekers (N=14) and non-activity seekers (N=14). In order to determine the characteristics of both groups and the extent to which movement played a part in their lifestyles, a series of 8 experimental hypotheses were tested over a period of 18 months. Quantitative and ethnographic data were collected by standardized exercise and psychological tests, inventories and questionnaires, teacher surveys, interviews, and school records. Although the two groups scored similarly on some of the variables measured, comparisons found the activity seekers to be significantly different in a variety of ways which are discussed in terms of: physiological functioning; self-perception; health orientation; achievement orientation; perceptual style; cognitive functioning; and personal life style. Results suggest that different teacher strategies in the gymnasium and in the classroom might be required to meet the needs of both activity seekers and non-activity seekers. (LL)

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Activity in the Lifestyles of Adolescent Girls

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Activity in the Lifestyles of Adolescent Girls

Abstract

Following a pilot study in which it had been shown that the Attraction component of the Physical Attraction and Estimation Scale (PEAS, Sonstroem, 1974, 1976 and 1978) identified girls who displayed both very positive attitudes toward, and participated frequently in physical activity, the partial PEAS was administered to a sample of girls (14-16 years, n=155) at a Melbourne metropolitan high school. Two groups of girls scoring more than one and a half standard deviations from the mean on the attraction scale were operationally defined as "activity seekers" (n=14) and "non-activity seekers" (n=14).

In order to determine the characteristics of both groups and the extent to which movement played a part in their lifestyles, a series of eight experimental hypotheses was tested over a period of 18 months. Quantitative and ethnographic data were collected by standardized exercise and psychological tests, inventories and questionnaires, teacher surveys, interview, and from school records.

Although it was established that the two groups scored similarly on some of the variables measured (self cathexis) the comparisons (t tests and ANOVAs) found the activity seekers to be significantly different in a variety of ways. For example, their aerobic (PWC170, Sjostrand, 1947) and anaerobic (10 sec power test, Telford et al, 1978) capacities were significantly higher ($p<.05$ and $p<.01$, respectively). The activity seekers had more positive self perceptions in terms of self esteem (Rosenberg, 1965, $p<.01$), total body image (Storer, 1983, $p<.01$), self cathexis (Secord and Jourard, 1953, $p<.05$), estimation of

physical ability (Sonstroem, 1974, $p<.001$) and adolescent marginality (Mann, 1965, $p<.05$). They also possessed a higher degree of coherence (Antonovsky, 1979, 1983, $p<.05$) and an internal health locus of control (Wallston, Wallston and Devellis, 1978, $p<.10$). The activity seekers had broader and more meaningful perceptions of physical activity and recreation (Kenyon, 1968, $p<.001$ and Nettleton, 1975, $p<.001$). They differed in their attitude toward school (Gardner, 1978, $p<.10$) and the career ambitions of the activity seekers were less gender stereotypical. The activity seekers were significantly more field independent as determined by the Embedded Figures Test (Witkin et al, 1971, $p<.05$). It was also found that an aspect of cognitive functioning (short term memory) improved more after exercise (Brown and Poulton, 1961, $p<.10$) among the activity seekers than the non-activity seekers. Lifestyle variables of the two groups also differed; for example, use of discretionary time (Nettleton, 1975), family recreation, ethnic background, activity preferences, and role expectations.

Factor analysis (SSSP, Nie et al, 1970) of the scores of the girls on 41 variables extracted eight mutually independent factors which accounted for 84% of the variance. The four main factors loaded on 24 of the variables (41.6% variance).

It was suggested that different teacher strategies in the gym and in the classroom might be required to meet the needs of both activity seekers and non-activity seekers.

Activity in the Lifestyles of Adolescent Girls

The relationship of physical activity to many aspects of human functioning has long been acknowledged; for example, emerging from much of literature concerning physical activity and school children is the suggestion that involvement in physical activity in some way affects school achievement. It has been suggested that participation in physical activity enhances self esteem. These improved self attitudes may be reflected in changed attitudes toward school, as well as, facilitated achievement (Sutcliffe and Canham, 1937; McDonald, 1969; Anderson, 1975; Spiers, 1979; and Coonan 1985). However, scientific attempts to define those complex inter-relationships have often been unsuccessful. Recent lifestyle studies of adolescent and adult males have indicated that contextual variables have significant influence on the contribution which movement has in the lives of some individuals, Cox, Shepard, and Corey (1981). Work by Briggs and Nettleton (1980), Nettleton and Dixon (1980) and, Dixon (1982) found that physical activity permeated both the work and leisure time of some employees and their personal fulfillment was linked with the extent to which activity was inherent in their daily tasks. Nettleton (1980) and Carne (1979) suggested that for some school children physical activity was so important to their optimal functioning that they have been labelled, "activity seekers". Carne identified two groups of adolescent boys, extreme in aerobic potential, who were significantly different in certain aspects of their lifestyles including the nature of their play activities before school, at recess and at lunch, their friendship patterns, attitudes toward

physical activity, and, cognitive functioning after exercise.

However, little attention has been given by researchers to gender differences or, more specifically, the activity seeking tendencies of females. Hence, this investigation was undertaken to determine the significance of physical activity in the lifestyles of a selected group of female adolescents.

METHOD

Limited resources prevented the use of either telemetry or observation to identify the subjects from among the sample available to the researcher. Carne had found that the activity seeking behavior of high school boys was significantly related to their attitudes toward physical activity. Therefore, it was resolved to attempt to identify activity seekers and non-activity seekers by the degree of their attraction toward physical activity. A pilot study, undertaken to determine the activity seeking attitudes of a group of adolescent girls, found that Physical Estimation and Attraction Scale (PEAS, Sonstroem, 1974, 1976, 1978) was effective in determining activity seeking tendencies. From a sample of 15 year old girls (s=155) two groups, more than one and a half standard deviations from the mean on the PEAS attraction scale, were operationally defined as "activity seekers" (n=14) and "non-activity seekers" (n=14).

In order to investigate various aspects of physiological, psychological, social and cognitive functioning the two groups, eight null hypotheses were tested. With few exceptions I collected all the data.

Null Hypothesis 1: the two groups will not differ in physiological functioning, in terms of aerobic capacity (PWC 170,

Sjostrand, 1947) and alactic capacity (10 second power test, Telford, Briggs, and Chennells, 1980).

Null Hypothesis 2: the two groups will not differ in their self perceptions, as measured by self esteem (Rosenberg, 1963), self and body cathexis (Secord and Jourard, 1953) body image (Storer, 1983), estimation of physical ability (PEAS, Sonstroem, 1974, 1976 and 1978, estimation scale only), and adolescent marginality (Mann, 1965). General (or global) self perception is composed of many different contextual views which may be so integrally related that they may be difficult to entirely isolate from each other (Brownfain, 1965); that is, there may be some degree of common content among these measures.

Null Hypothesis 3: the two groups will not differ in their health orientation, in terms of health locus of control (HLOC, Wallston, Wallston and DeVellis, 1978) and sense of coherence (SOC, Antonovsky, 1982). Antonovsky (1979) claimed that the global health orientation is dependent on specific coping, or stress management, mechanisms. A similar influence on self perception and behaviour is locus of control.

Null Hypothesis 4: the two groups will not differ in their perceptions of physical activity and recreation, (CPA, Nettleton, 1975) and concept of physical activity (ATPA, Kenyon, 1968). The CPA is a semantic differential scale and the ATPA is associated with a conceptual model which is divided into six subdomains; the preferred type of activity indicates the meaning which physical activity has for the individual.

Null Hypothesis 5: the two groups will not differ in their achievement orientation, assessed by attitude to school (ATS,

differences between the two groups were analyzed using either the appropriate t test or single analysis of variance model as outlined by Popham and Sirotnik (1973).

A broader picture, developed through a more sophisticated treatment of the data, was required in order to obtain an overview of how physical activity influenced the lives of the girls. Based on the rationale of Kane (1974) a single component analysis was computed in order to determine if it was possible to identify a small number of factors which might be used to describe activity seekers. The principal factoring, without iteration, method was applied, followed by the varimax method of orthogonal rotation. The computer program used was from the Statistical Package for the Social Sciences (Nie et al, 1975).

Four subjects left the school during the course of the investigation. In the reporting of results, the degrees of freedom for the t test analyses followed the protocol suggested by Popham.

RESULTS AND DISCUSSION

Physiological Functioning

The two groups were similar in age (activity seekers, mean=15.09, S.D.=1.04 years; non-activity seekers, mean=14.89, S.D.=1.13 years). However, the activity seekers (mean=11.03, S.D.=2.96 PWC170/Kg) were superior in aerobic capacity to the non-activity seekers (mean=9.00, S.D.=1.79 PWC170/kg). This difference was significant at the .05 level (t=2.196). The activity seekers also tended to be heavier (mean=54.64, S.D. Kg, compared to mean=50.64, S.D.=5.97 Kg). The trend does not reach the 0.05 level of significance. The activity seekers

Gardner, 1978), subject marks and information gained by personal interview. School achievement was defined as the average reported assessment over one year. Grades were compared by summing the following numerical weighting: A=5, B=4, C=3, D=2, and E=1. Teachers similarly rated the girls' ability in their subject, "academic" or "practical" (manual).

Null Hypothesis 6: the two groups will not differ in perceptual style, (EFT, Embedded Figures Test, Witkin et al, 1971). Witkin and coworkers suggested that aspects of personality relevant to performance on certain perceptual tasks are dynamically interactive. One variable is the nature of the relationships which an individual has with the environment, termed perceptual style, field dependence-independence or psychological differentiation.

Null Hypothesis 7: the two groups will not differ in an aspect of their cognitive functioning, improvement in short term memory following a brief exercise bout adjusted to the aerobic fitness level of the individual (Brown and Poulton, 1961).

Null Hypothesis 8: the two groups will not differ in their personal lifestyles, in terms of their use of free time, Discretionary Scale (Nettleton, 1975), and information gained by personal interview such as gender-role stereotyping, family recreation patterns, and ethnic background.

ANALYSIS

A basic descriptive statistical approach was used in the analysis of the data. On all variables, means and standard deviations were calculated for both activity seekers and non-activity seekers, and, in some cases, the total group. The

(mean=166.000, S.D.=61.508 arbitary units) also had significantly ($t=3.363$, $p<0.01$) higher power output than the low attitudinal subjects (mean=105.143, S.D.=28.287).

Self Perception

The self esteem means and standard deviations of the two groups and the results of the ANOVA indicate that activity seekers (mean=31.214, S.D.=4.560) had significantly higher self esteem ($F=10.861$, $p<0.01$) than the non-activity seekers (mean=26.071, S.D.=3.647).

The feelings which the activity seekers held about their bodies were more positive than the those held by the non-activity. The activity seekers (mean=62.714, SD=7.529 and mean=48.643, SD=9.129) considered their bodies to be significantly better ($t=2.599$, $p<0.02$ and $t=2.915$, $p<0.01$) instruments for activity and power than did the non-activity seekers (mean=55.143, SD=7.882 and mean=40.429, SD=5.273). Overall, the movement orientated group (mean=170.500, SD=17.154) held more favourable images of their bodies ($t=3.024$, $p<0.01$, non-activity seekers, mean=152.714, SD=13.781).

There was a tendency ($t=1.166$, NS) for activity seekers (mean=156.429, SD=23.181) to be more satisfied with their body parts and functions (non-activity seekers, mean=145.143, SD=27.809). Activity seekers (mean=195.857, SD=20.482) also scored significantly higher ($t=2.268$, $p<0.05$) on the self cathexis scale than did the others (mean=175.286, SD=26.788).

Not unexpectedly, on the other PEAS scale, activity seekers (mean=27.00, SD=4.62) rated themselves estimation, more physically capable ($t=8.46$, $p<0.001$) than did the non-activity

seekers (mean=8.79, SD=3.40).

Scores on the AM scale clearly indicated that activity seekers (mean=117.500, SD=12.726) considered themselves to be less external to childhood or adulthood than did non-activity seekers (mean=104.833, SD=17.135, $t=2.221$, $p<0.05$). Activity seekers held stronger adult values than the non-activity seekers who tended to be more susceptible to peer group pressures.

Health Orientation

The HLOC scores suggested that non-activity seekers felt that their health was either controlled by chance (mean=19.786, SD=6.117) or in the hands of others (mean=17.786, SD=7.176). Activity seekers scored higher on internal locus of control (mean=25.786, Sd=3.906, $t=1.456$, $p<0.10$). The differences on chance (mean=18.00, SD=2.855) and powerful others factors (mean= 14.000, SD=4.820) were not significant ($t=0.990$ and $t=1.639$).

Differences ($p<0.05$) existed between the two groups on all themes of the SOC. Activity seekers tended to understand their world better (comprehension, mean=48.429, SD=9.104), thought that they were better equipped to handle the demands placed on them (manageability, mean=48.071, SD=9.517) and made more sense of life cognitively and emotionally (meaningfulness, mean=45.429, SD=5.258). In contrast, non-activity seekers were significantly less positive in their perceptions of life circumstances on all factors except comprehension (means and S.D. 42.429, 7.248, 40.643, 8.906 and 40.429, 6.223 respectively).

Perception of Physical Activity and Recreation

The ATPA indicated that the activity seekers perceived movement experiences more positively than did the non-activity

seekers. The activity seekers saw physical activity more as: "providing opportunities for meeting and making friends," "making a contribution to their health and fitness," "offering an element of thrill or risk," "aesthetic experiences," "providing opportunities for relaxation," and "meeting a challenge." On the other hand, the non-activity seekers appreciated the grace, form and creative expression in movement. These girls rather enjoyed the social interaction and the opportunities to develop friendships. They rated lowly the physical effort frequently associated with exercise.

The results on the CPA confirmed that the activity seekers had more positive feelings about physical activity which they associated more with: "doing something important," "excitement," "active, rather than passive," "competitive," "worthwhile," "pleasant," "adventure," "noisy," "feeling confident," and "fun." Although the non-activity seekers also viewed physical activity favourably as, "worthwhile," "fun," and "pleasant," they also saw movement more, "filling in time," "safe," "slightly embarrassing," and "boring."

Achievement Orientation

The results on the ATS suggested that there was a trend ($t=1.482$, $p<0.10$) for the activity seekers to be more positive in their attitudes toward school (mean=75.857, SD=15.718) than were non-activity seekers (mean=65.071, SD=13.153). There was no difference between the ability and achievement of either group of girls. However, the teachers had reported the activity seekers to be significantly higher in ability ($t=2.50$, $p<0.05$) and achieved more ($t=2.21$, $p<0.05$) than the non-activity seekers.

Further statistical analysis (chi square) of the under and over achievement of individuals within each group was undertaken. The results (academic chi sq=1.69, $p<0.05$ and practical chi sq=3.85, $p<0.20$) revealed a tendency for activity seekers to achieve less in relation to their ability in both academic and practical learning. While non-activity seekers appear to achieve comparatively to their ability, it is tentatively suggested that the activity seekers could possibly have been academically disadvantaged by the type of schooling they experienced. When asked about personal ambitions in sport, career and social life, the activity seekers placed "sport" or "career" on the highest priority. On the other hand, the non-activity seekers more consistently chose success in "career" or "social life" as most important to them. Only six non-activity seekers considered higher education a possibility and most of the group selected, what have been in the past, feminine careers, but twelve activity seekers saw themselves as undertaking higher studies, frequently toward non-traditional careers.

Perceptual Style

The activity seekers were more field independent (analytical in perceptual style, mean=300.146, SD=149.507), while the non-activity seekers were more field dependent (mean=446.372, SD=210.031, $t=2.122$, $p<0.05$).

Cognitive Functioning

Interesting differences were evident between the groups. The short term memory of all subjects benefited by the brief exercise bout. The activity seekers made more correct responses in the post-exercise test; that is, their processing ability

improved significantly ($p<0.10$). The non-activity seekers improved only slightly in the second test ($t=0.43$, NS). The facitated cognitive functioning could have been enhanced in two ways, either by more rapid or more accurate information processing. To determine if the improvement resulted in a trade-off of accuracy for speed, the differences between the number of correct and incorrect responses in pre- and post-activity tests were calculated. It was found that the activity seekers reduced their errors in the second test, but the non-activity seekers tended to increase theirs; that is, both accuracy and speed of information processing was facilitated among the activity seekers. The difference between the pre- and post-activity mean scores was more significant for the activity seekers. Scores on the "Intelligence" scale, Factor B, of the Personality Questionnaire (PF 16, Cattell, 1969) suggested that there were no differences ($t=0.554$, NS) in general mental ability between the activity seekers (mean=8.071, SD=1.385) and the non-activity seekers (mean=7.692, SD=1.251).

Personal Lifestyle

Free Time

There was a indication that activity seekers were involved in a broader range of activities; their recreation was more likely to be physically and were prepared to commit their time. The non-activity seekers preferred sedentary recreation and activities which required less commitment. It must be emphasized that these data are by no means definitive but indicate the need for more thorough ethnographic studies of the recreational activities of adolescent girls. Physical activity seemed to be

an integral part of the family life of activity seekers. In contrast, the non-activity seekers had less active recreation: there was little parental support for the activity of daughters.

Ethnicity

All the activity seekers and their parents were Anglo-Saxon-Celtic and born in Australia. Four of the non-activity seekers were born overseas and only seven of them had both parents born in Australia. The results seemed to suggest that the emphasis placed on sport and active recreation in the dominant culture may well have a significant influence not only on activity seeking tendencies, but also on many of the other variables examined in this investigation.

Role Expectations

These perceptions were investigated by two methods: type of preferred activities and personal interview. Although the scales are somewhat superficial measures of gender and activity orientation, they effectively distinguished between the two groups; the activity seekers desired to take up both non-traditional and traditional gender orientated work and leisure activities. During the interviews cues intended to stimulate responses about gender behavioral expectations drew little comment from the activity seekers. On the whole, these girls seemed unaware of social pressures, particularly in regard to their involvement in physical activity. The following are some expressions of how the activity seekers saw themselves in regard to physical activity: "I'm embarrassed by my ability...I play it down with my friends." "I always do my best in competition." "My friends don't worry what I'm like." "My family, especially

my parents, encourage me." "I get annoyed when I can't do all the things boys do." "I get fed up sitting around doing nothing." However, for the non-activity seekers the behavorial role was more precisely defined. There were only three non-activity seekers who made neutral responses to the role orientation cues. This group had fewer positive thoughts about physical activity. Selected responses follow. "Girls shouldn't be too rough." "We're less active." "I enjoy meeting people from other forms in phys. ed. electives." "We shouldn't be aggressive." "Sport's not lady-like." "[Girls] do the housework." "Boys like girls to be good at sport." "I'm unsure of myself in phys. ed." It appeared that non-activity seekers were much more influenced by traditional gender roles than were activity seekers. However, there some of the more activity orientated girls who, at times, still modified their exercise intensity and performance levels to gain peer approval.

FACTOR ANALYSIS

A factor analysis was undertaken in an attempt to determine if the forty-one comparisons, made in the hypotheses testing, either formed factors which were separate from each other (orthogonal) or were truly independent. It was found that the eight factors accounted for nearly 84 % of the variance. The four main factors are described as follows.

Factor 1: This factor was significantly loaded on twenty-four of the variables and accounted for nearly 42 % of the variance. The highest loadings appear meaningful in relating variables which concern attitudes toward physical activity and the competent body. The factor was named, "Corporeal Interest and Regard".

Factor 2: This factor which accounted for 13 % of the variance appeared to be best described in terms of "Control of Life and Body". The highest loadings were found on the four elements associated with perceived control over life (sense of coherence) and satisfaction with self and body (cathexis).

Factor 3: High loadings on items related to body image and adolescent marginality indicated that this factor was best labelled, "Body Image".

Factor 4: Because of the high loadings on variables ("aerobic capacity", "alactic power" and "perceptual style") this factor was termed, "Physiological and Psychological Functioning".

From the examination of the above factors and, in particular, the loadings of the variables in Factor 1, it would appear that interest and competence in physical activity may be regarded as integrally woven with a developing esteem for one's body and heightened appreciation of self worth. It is suggested that this integrative process is of considerable importance to those girls who are "activity seekers". In order to investigate differences between the two groups on the factor "Corporeal Interest and Regard", factor scores were computed on each of the factors. Scores were generated using the statistical procedures recommended by Nie et al, 1970.

The mean factor scores and the standard deviations on the factor, "Corporeal Interest and Regard", for the two groups of girls were calculated. The results indicated that the integrative function of involvement in physical activity in the development of positive feelings toward one's body and self was considerably more important ($f1,22=11.325$, $p<0.001$) in the lives

of activity seekers (mean=0.278, SD=0.443) than in the non-activity seekers' (mean=-0.329, SD=0.429). Similar trends were also found in relation to the mean factor scores of each group on Factor 2 ("Control of Life and Body"), Factor 3 ("Body Image") and Factor 4 ("Physiological and Psychological Functioning").

RECOMMENDATIONS

Although it was found that the girls scored similarly on some of the variables measured, it was established that the lives of the activity seekers were different in a number of ways to those of the non-activity seekers; for example, they were from divergent ethnic backgrounds. Because perceptions are largely derived from individual experiences and so shaped by culture. Future researchers could undertake comparative studies among different ethnic and socio-economic groups.

Perhaps, one of the necessary limitations of this study has been the division of the girls into two main groups labelled, "activity seekers" and "non-activity seekers". From a consideration of the data it becomes increasingly evident that there exist different types of activity seekers. For example, a group of girls (s=7) who scored above average on activity seeking and on attitudes toward robust activity was identified. Scores of this group were then compared to those of girls (s=17) who received below average scores on the above two items. Significant differences were found in terms of field independence ($p<0.05$), alactic capacity ($p<0.01$), physical activity as catharsis ($p<0.01$), physical activity as ascetic ($p<0.01$), attraction to activities requiring endurance and speed ($p<0.01$), confidence in skill ($p<0.01$), perceptions of physical activity

($p<0.01$) and pursuit of vertigo ($p<0.05$). It appears possible that the cathartic and emotional function of robust anaerobic exercise contributed to the ways in which these girls regarded themselves. A fruitful area of future research could be the careful delineation of different kinds of activity seekers.

In a similar way it was decided to utilize the scores on "sense of coherence" as the dependent variable. Groups scoring above and below the mean score were identified and their scores on the total measures compared. The girls who exhibited a high sense of coherence differed from the remainder in that they scored significantly higher on all aspects of body image ($p<0.01$), high on body cathexis ($p<0.01$) and on self esteem ($p<0.20$). A speculative interpretation of the above results is that participation in physical activity appears to be strongly linked with an enhanced view of the self and with a feeling that life is meaningful and under control. Future work in this area might be worth pursuing.

Emerging from the discussion above is the importance of the personality dimension, "activity seeking" in a number of aspects of school achievement. In the same way that individual differences in literacy and numeracy are considered in curriculum planning, activity seeking should also be taken into account. Unfortunately, pupils who have greater movement needs are usually not well catered for in a program which only includes physical education twice weekly; they possibly require more activity to be structured into their school day. The positive self image of activity seekers, associated with their participation in physical activity, did not tend to be translated into positive

attitudes toward school. The specific needs of both activity seekers and non-activity seekers should be considered when planning their physical education experiences. Activity seeking tendencies were very closely associated with alactic capacity and attraction to robust, rather than aerobic, activities. In coeducational classes, the frequent domination of power activities by boys may not allow enough scope for the achievement and satisfaction of such girls. For the non-activity seekers the emphasis should be more on social interaction rather than hard physical effort to which they seemed adverse.

In conclusion, a major shortcoming of this study is that frequency of participation was not quantified. Also to understand more fully how movement experiences give meaning to the lives of individuals, it would also be valuable to use participant observation techniques in, for example, case studies. We need to probe comments such as, "I have a sense of control, sort of power, especially when I get something difficult [skill or movement] right," (Kate, 1985).

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